CLAIMS

What Is Claimed Is:

1. A vibrating reed comprising:

a base;

a vibration arm section formed so as to protrude from the base;

a grooved portion formed in one of an obverse surface and a rear surface of said vibration arm section; and

a groove electrode portion and a side electrode portion formed in the grooved portion and the side portion of the vibration arm section, respectively;

wherein a short-circuit prevention section is formed between the groove electrode portion and the side electrode portion.

2. A vibrating reed according to Claim 1, wherein said groove electrode portion and said side electrode portion further comprise excitation electrodes.

3. A vibrating reed according to Claim 1, wherein said short-circuit prevention section further comprises an insulation film.

4. A vibrating reed according to Claim 3, wherein said insulation film further comprises an etched insulating film.

5. A vibrating reed according to Claim 1, wherein a cut section is formed in said base.

6. A vibrating reed according to Claim 5, wherein said base is provided with a fixation area for fixing the vibrating reed, and said cut section is provided in the base between the fixation area and said vibration arm section.

7. A vibrating reed according to Claim 1, wherein said vibrating reed further comprises a tuning-fork-type vibrating reed formed from a crystal which oscillates between approximately 30 kHz and approximately 40 kHz.

8. A vibrator having a vibrating reed housed in a package, said vibrating reed comprising:

a base;

a vibration arm section formed so as to protrude from the base;

a grooved portion formed in one of an obverse surface and a rear surface of said vibration arm section; and

a groove electrode portion and a side electrode portion being formed in the grooved portion and the side portion of the vibration arm section, respectively;

wherein a short-circuit prevention section is formed between said groove electrode portion and said side electrode portion of said vibrating reed.

9. A vibrator according to Claim 8, wherein said groove electrode portion and said side electrode portion of said vibrating reed are excitation electrodes.

10. A vibrator according to Claim 8, wherein said short-circuit prevention section of said vibrating reed further comprises an insulation film.

11. A vibrator according to Claim 10, wherein said insulation film of said vibrating reed further comprises an etched insulation film.

12. A vibrator according to Claim 8, wherein a cut section is formed in said base of said vibrating reed.

13. A vibrator according to Claim 12, wherein a fixation area for fixing the vibrating reed is provided in said cut section of said vibrating reed, and said cut section is provided in the base between the fixation area and said vibration arm section.

14. A vibrator according to Claim 8, wherein said vibrating reed is formed by a crystal which oscillates between approximately 30 kHz and approximately 40 kHz and comprises a tuning-fork-type vibrating reed.

15. A vibrator according to Claim 8, wherein said package is formed in a box shape.

16. A vibrator according to Claim 8, wherein said package is formed in a cylinder shape.

17. An oscillator having a vibrating reed and an integrated circuit housed in a package, said vibrating reed comprising:

a base;

a vibration arm section formed so as to protrude from the base;

a grooved portion formed in one of an obverse surface and a rear surface of said vibration arm section; and

a groove electrode portion and a side electrode portion being formed in the grooved portion and the side portion of the vibration arm section, respectively;

wherein a short-circuit prevention section is formed between said groove electrode portion and said side electrode portion of said vibrating reed.

18. An electronic device using a vibrator which is connected to a control section, said vibrator having a vibrating reed housed in a package, said vibrating reed comprising:

a base;

a vibration arm section formed so as to protrude from the base;

a grooved portion formed in one of an obverse surface and a rear surface of said

vibration arm section; and

a groove electrode portion and a side electrode portion formed in the grooved portion and the side portion of the vibration arm section, respectively;

wherein a short-circuit prevention section is formed between said groove electrode portion and said side electrode portion of said vibrating reed.

19. A method of manufacturing a vibrating reed including a base, a vibration arm section formed so as to protrude from the base, a grooved portion formed in one of an obverse surface and a rear surface of said vibration arm section, and a groove electrode portion and a side electrode portion formed in the grooved portion and the side portion of the vibration arm section, respectively, said method comprising:

a step of forming a short-circuit prevention section between the groove electrode portion and the side electrode portion,

the step including at least a step of forming an insulation film in said vibration arm section so that the insulation film formed in said side portion and said grooved portion is thinner in film thickness than the insulation film formed on the obverse surface of said vibration arm section, and

a step of removing said insulation film formed in said side portion and said grooved portion.